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UNITED STATES PATENT OFFICE.

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SAFETY PAPER FOR NEGOTIABLE INSTRUMENTS AND PROCESS FOR MAKING SAME.

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To all whom it may concern:

Be it known that I, BURGESS W. SMITH, a citizen of the United States of America, and a resident of the city of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Safety Paper for Negotiable Instruments and Processes for Making Same; and I hereby declare the following to be a full, clear, and exact description of the same.

The invention relates generally to safety papers and processes for producing same, and has particular reference to the production of safety papers of the kind that show by a change in the appearance or color when attempts have been made to alter them by the use of chemicals.

A broad object of the invention is to provide a process and product which, while very effective in the protection afforded, does not involve a high manufacturing cost.

A more specific object of the invention is to provide a safety paper which is very sensitive to the action of both acids and alkaline hypochlorites, so that the use of either or both will produce and leave a disfiguring stain.

Another object is to provide a safety paper which, while extremely sensitive to chemicals used for erasing purposes, will not deteriorate under normal conditions or show by chemical changes the effects of handling.

Another object is to provide a safety paper and process for making same whereby the chemical decomposition of a stable coloring matter in or upon the paper will affect mineral or organic matter in proximity to the coloring matter in such a way as to produce a disfiguring stain.

In the preferred way of producing safety paper according to this invention, ultramarine and some organic or mineral matter which will give a color reaction with hydrogen sulphide are added to the paper, preferably by introducing them into the beater. The most satisfactory matter for giving the color reaction is an insoluble lead salt such as lead carbonate. In order to protect the ultramarine from decomposition by any slight acidity that might be accidentally developed under normal conditions, a small quantity of some alkaline carbonate such as calcium carbonate or, preferably, the more soluble sodium carbonate, may be added.

As a final step, the paper may be given a sizing or surface coating by means of a solution containing a small amount of a maganese salt that is decomposable by a hypochlorite of an alkali, such as the sulphate or the nearly insoluble ferrocyanide of manganese. This manganese salt may, if desired, be incorporated in the paper by introducing it into the beater with the ultramarine and lead salt.

The proportions of the materials are unimportant so long as sufficient of each is present to give the desired depth of stain. That is a matter readily ascertained by one skilled in the art of making safety paper. It is, however, desirable to employ a sufficient amount of ultramarine to give the paper a pronounced blue tint.

Upon the application of any of the usual acids for removing ink the ultramarine, which is a complex silica-alumina-soda sulphide, perfectly stable under normal light and atmospheric influences, decomposes and liberates hydrogen sulphide in close proximity to the lead salts. The result is that the lead salts are converted into a lead sulphide of a deep brown or black. At the same time the ultramarine is bleached.

It is well known that the lead sulphide may be bleached by the application of an alkaline hypochlorite and in this way, the lead sulphide stain may be removed, but in doing this, the manganese salt will be decomposed and a brown stain created.

The spirit of the invention will not be departed from by using any or all of the materials in a sizing solution or incorporating any or all of them in the body of the paper and it is not the desire to be limited to any specific combination of materials, as the invention is susceptible of various modifications and changes all coming within the scope of the claims which follow.

What is claimed is:

1. The process of making safety paper which consists in incorporating in the paper ultamarine, an insoluble lead salt and an alkaline carbonate, and sizing the paper with a solution containing a manganese salt decomposable by a hypochlorite of an alkali.

2. The process of making safety paper

which consists in incorporating in the body of the paper, ultramarine, lead carbonate and calcium carbonate, and sizing the paper in a solution containing ferrocyanide of manganese.

3. A safety paper containing ultramarine and a metallic salt which will be acted upon by hydrogen sulphide to produce a stain.

4. A safety paper containing ultramarine and an insoluble lead salt.

5. A safety paper containing ultramarine and lead carbonate.

6. A safety paper containing ultramarine, an insoluble lead salt and an alkaline carbonate.

7. A safety paper containing ultramarine, lead carbonate and an alkaline carbonate.

8. A safety paper containing ultramarine, lead carbonate and sodium carbonate.

9. A safety paper containing ultramarine, an insoluble lead salt and a manganese salt decomposable by a hypochlorite of an alkali.

10. A safety paper containing ultramarine, lead carbonate and a manganese salt decomposable by a hypochlorite of an alkali.

11. A safety paper containing ultramarine, lead carbonate, an alkaline carbonate and a manganese salt decomposable by a hypochlorite of an alkali.

12. A safety paper having incorporated therein, ultramarine, lead carbonate and sodium carbonate and sized with a solution containing ferrocyanide of manganese.

13. A safety paper containing ultramarine and matter which when acted upon by hydrogen sulphide will produce a disfiguring stain.

14. A safety paper treated with a metallic sulphide decomposable by an acid to produce hydrogen sulphide, matter which when acted upon by hydrogen sulphide will produce a stain, and a metallic salt decomposable by a hypochlorite of an alkali to produce a stain.

15. A safety paper treated with a metallic sulphide decomposable by an acid to produce hydrogen sulphide, matter which when acted upon by hydrogen sulphide will produce a stain, a metallic salt decomposable by a hypochlorite of an alkali to produce a stain, and an alkaline carbonate.

BURGESS W. SMITH.